

# **APPARATUS AND METHODS FOR PREDICTING PROPERTIES OF PROCESSED MATERIAL**

## Abstract

The invention provides an apparatus and methods for predicting properties of processed material by simulating the processing history of the material, by using a two-phase constitutive description of the material to characterize the morphology of the material as it is being processed, and by using this morphological characterization to predict values of properties of the material at any stage of processing. The property values may be used in a structural analysis of the processed part, in the design of the part, and/or in the design of the process for manufacturing the part.